IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

MONOLITHIC POWER SYSTEMS, INC., Plaintiff, v. REED SEMICONDUCTOR CORP., Defendant, Counterclaim-Plaintiff.	Civil Action No.: 23-cv-1155-JFM **JURY TRIAL DEMANDED**
MONOLITHIC POWER SYSTEMS, INC., a Delaware Corporation, Plaintiff, v. REED SEMICONDUCTOR CORP., a Delaware Corporation Defendant.	Civil Action No.: 24-cv-165-JFM **JURY TRIAL DEMANDED**
MONOLITHIC POWER SYSTEMS, INC., a Delaware Corporation, Plaintiff, v. NENGDA MICROELECTRONICS (SHENZHEN) CO., LTD., a Chinese Corporation; and NENGDA SEMICONDUCTOR TECHNOLOGY (SHENZHEN) CO., LTD., a Chinese Corporation, Defendants.	Civil Action No.: 24-cv-166-JFM **JURY TRIAL DEMANDED**

CLAIM CONSTRUCTION ORDER

In this case, Monolithic alleges that Reed infringes U.S. patent no. 9,590,608. The parties dispute the meaning or definiteness of 5 claim terms. We assume the reader has knowledge of the patent and allegations in this case, claim construction law, and the arguments advanced before and during the claim construction hearing. Below, we insert our rulings into the same outline the parties used in their joint claim construction brief. For some terms, we indicate which party's reasoning we adopted; for others, we explain different reasoning.

I. REPRESENTATIVE CLAIMS

Disputed Terms	**U.S. Patent No. 9,590,608, Independent Claim 1 (18:66–19:48)**
	A bootstrap refresh control circuit for a voltage converter, wherein the voltage converter comprises a high side switch, a low side switch and a bootstrap capacitor for providing a bootstrap voltage signal to supply a high side driver of the high side switch, and wherein the voltage converter is configured to receive an input voltage at an input terminal and to provide an output voltage at an output terminal based on driving the high side switch and the low side switch to switch on and off, and wherein the bootstrap refresh control circuit comprising:
	a bootstrap refresh module, wherein the bootstrap refresh module comprises a first comparing module having a first input terminal, a second input terminal and an output terminal, and wherein the first input terminal of the first comparing module is configured to receive the bootstrap voltage signal, the second input terminal of the first comparing module is configured to receive a bootstrap refresh threshold, and the first comparing module is configured to compare the bootstrap voltage signal with the bootstrap refresh threshold to provide a first comparing signal having a first logic state and a second logic state at the output terminal, and wherein the first comparing signal has the first logic state when the bootstrap voltage signal is lower than the bootstrap refresh threshold, and wherein the first comparing signal has the second logic state when the bootstrap voltage signal is larger than the bootstrap refresh threshold; and

Disputed Terms	U.S. Patent No. 9,590,608, Independent Claim 1 (18:66–19:48)
	a voltage difference module having a first input terminal, a second input terminal and an output terminal, wherein the first input terminal of the voltage difference module is configured to receive a feedback signal representing the output voltage of the voltage converter, the second input terminal of the voltage difference module is configured to receive a reference voltage signal representing a desired value of the output voltage of the voltage converter, the voltage difference module is configured to compare the feedback signal with the reference voltage signal so as to provide a difference signal at the output terminal; and
1	wherein when the first comparing signal has the first logic state, the bootstrap refresh module is configured to decrease the output voltage of the voltage converter; and wherein ***when the feedback signal is smaller*** than the reference voltage signal, the bootstrap refresh control circuit is configured to control the high side switch and the low side switch to switch on and off based on the difference signal so as to charge the bootstrap capacitor for refreshing the bootstrap voltage signal.

Disputed Terms	U.S. Patent No. 9,590,608, Dependent Claim 6 (21:5–30)
	The bootstrap refresh control circuit of claim 1, wherein the bootstrap refresh module further comprises:
2 3	***a Constant On Time circuit*** configured to provide ***a COT control signal*** having a first logic state and a second logic state so as to set a constant on time for the low side switch, wherein the COT control signal has the first logic state during the constant on time, and wherein the COT control signal has the second logic state beyond the constant on time; and
	a first logic module having a first input terminal, a second input terminal and an output terminal, wherein the first input terminal of the first logic module is configured to receive the first comparing signal, the second input terminal of the first logic module is configured to receive the COT control signal, and the first logic module is configured to conduct a logic operation to the first comparing signal and the COT control signal for providing a bootstrap refresh signal having a first logic state and a second logic state at the output terminal; and

Disputed Terms	U.S. Patent No. 9,590,608, Dependent Claim 6 (21:5–30)
4 5	***wherein the bootstrap refresh signal has the first logic state when the first comparing signal has a first logic state so as to turn the low side switch on, and the bootstrap refresh signal has a second logic state when the COT control signal has a second logic state so as to turn the low side switch off***.[1]

II. AGREED-UPON CONSTRUCTIONS

Claim of the '608 Patent	Claim Term	Agreed Upon Proposed Construction
Independent claim 1	"A bootstrap refresh control circuit for a voltage converter, wherein the voltage converter comprises a high side switch, a low side switch and a bootstrap capacitor for providing a bootstrap voltage signal to supply a high side driver of the high side switch, and wherein the voltage converter is configured to receive an input voltage at an input terminal and to provide an output voltage at an output terminal based on driving the high side switch and the low side switch to switch on and off"	The preamble is limiting.
Independent claim 12	"A bootstrap refresh control method for a voltage converter, wherein the voltage converter comprises a high side switch, a low side switch and a bootstrap capacitor for providing a bootstrap voltage signal to supply a high side driver of the high side switch, and wherein the voltage converter is configured to receive an input voltage and to provide an output voltage based on driving the high side switch and the low side switch to switch on and off"	The preamble is limiting.

[1] Claim 6 has been chosen as representative for terms 4 and 5, but there is a slight deviation in language between term 4 (in claim 6) and term 5 (in claim 15). However, the disputed issue for these two terms is the same, so these terms are dealt with together in the same section, below.

Claim of the '608 Patent	Claim Term	Agreed Upon Proposed Construction
Independent claim 1; Dependent claim 11	"provide a first comparing signal having a first logic state and a second logic state at the output terminal"	Not indefinite. Plain and ordinary meaning, which means: "provide a first comparing signal having a first logic state and a second logic state at the output terminal of the first comparing module"

III. DISPUTED CONSTRUCTIONS

A. Term 1: "when the feedback signal is smaller than" (claims 1 and 11)

Term	MPS's Proposed Construction	Defendants' Proposed Construction	Why Resolution of the Dispute Matters
"when the feedback signal is smaller than"	"once the feedback signal becomes smaller than"	Plain and ordinary meaning, which is: "during the time that the feedback signal has a voltage lower than"	Plaintiff's Position: The '608 Patent refers to a specific situation where a change in the feedback signal triggers the subsequent switching. Reed would improperly broaden this element to encompass different situations where the feedback signal happens to be smaller than the reference voltage signal, which are not encompassed in the scope of the patent. Reed also would improperly narrow this element to require that switching occurs while the feedback signal is smaller than the reference voltage signal. Reed is attempting to read in situations where the feedback signal happens to be smaller than the reference voltage signal in order to have broad invalidity defenses. Defendants' Position:

Term	MPS's Proposed Construction	Defendants' Proposed Construction	Why Resolution of the Dispute Matters
			Resolution of this term is expected to be relevant to the parties' disputes regarding noninfringement and/or invalidity. Moreover, Plaintiff's overly narrow proposed construction does not capture the full scope of the plain and ordinary meaning of the term as interpreted by a POSITA in view of the intrinsic and extrinsic evidence. Defendants' proposed construction achieves that and clarifies the full scope of the term.

The court's construction: **once the feedback signal becomes smaller than.** We adopt Monolithic's reasoning. The question is how to understand "when" in the context of this claim term. There is no real dispute over the general idea that occasionally the bootstrap capacitor needs to be recharged, and the feedback signal falling below the reference initiates the recharge process. And so the parties seem to agree that the recharge process begins once the feedback signal falls below the reference. Reed's "during" requirement adds a further limitation that this recharging must continue the whole time (and any time) the feedback signal is smaller than the reference. Some general definitions of "when" accommodate Reed's argument, but the claim's overall structure is one of triggering events, not durations. And Reed's proposal goes further than — and may wrongly exclude — the patent's explanation that "***[o]nce*** the output voltage (V_{OUT}) drops lower than the desired value, the control module 131 is configured to ***start to***

switch . . . ." 608 patent 14:49-55 (emphasis added); *see also* DI 161 at 16 (annotated version of Fig. 5).[2]

B. Terms 2 and 3: "a Constant On Time Circuit" (claim 6) and "a COT Control Signal" (claims 6 and 15)

Term	MPS's Proposed Construction	Defendants' Proposed Construction	Why Resolution of the Dispute Matters
Claim 6: "a Constant On Time Circuit"	Plain and ordinary meaning, where the meaning is the text of the phrase itself, which a POSITA would understand to be circuitry that sets a switch's conduction time.	"a circuit that creates a signal that turns off the low side switch after a fixed amount of time has elapsed from the bootstrap refresh starting time" Defendants have also proposed the following construction: "a circuit that creates a signal that turns off the low side switch a fixed amount of time after the bootstrap refresh is initiated." The arguments in this section are the same under both proposed constructions.	<u>Plaintiff's Position:</u> MPS does not believe that these particular terms are important for the Court to construe (other than being a term Defendants infringe under a proper construction). Reed's proposed constructions add numerous limitations to impermissibly narrow the claim scope, in an apparent attempt to create non-infringement arguments. <u>Defendants' Position:</u> Resolution of this term is expected to be relevant to the parties' disputes regarding noninfringement and/or invalidity. Defendants' construction is true to the intrinsic and extrinsic evidence and meaning to a POSITA, preserve the meaning of the term "constant," and properly clarify for the factfinder the point of the COT circuit/signal in the purported invention of the '608 Patent.

[2] The parties debate at length various extrinsic evidence and certain aspects of the record before the PTAB. That evidence was of little assistance compared to the structure of the claim itself and the most relevant embodiments in the specification, which of course get greater weight.

Term	MPS's Proposed Construction	Defendants' Proposed Construction	Why Resolution of the Dispute Matters
Claim 6: "a COT control signal" Claim 15: "a Constant On Time control signal"	Plain and ordinary meaning, where the meaning is the text of the phrase itself, which a POSITA would understand to be a control signal provided from the Constant On Time Circuit.	"a signal that causes the low side switch to turn off after a fixed amount of time has elapsed from the bootstrap refresh starting time" Defendants have also proposed the following construction: "a signal that causes the low side switch to turn off a fixed amount of time after the bootstrap refresh is initiated." The arguments in this section are the same under both proposed constructions.	

The court's construction: "a Constant On Time Circuit" means **circuitry that sets a switch's conduction time for any given cycle**; "a COT control signal" or "a Constant On Time control signal" means **a control signal provided from the Constant On Time Circuit.** We adopt Monolithic's reasoning with the additional clarification that the conduction time is set (constant) for a given cycle. The real dispute here is whether the claim is limited to constant on time circuits that have a conduction time fixed at the time of design or manufacture that cannot be changed in the completed product. But the patent contemplates that the constant on time circuit itself can set the time, rather than it being fixed by design: "That is to say, the longer on time ***set by the COT circuit 37***, the recovering ability of the bootstrap voltage (VBST) is

stronger . . . . Thus, generally, the on time will not be set too long ***by the COT circuit 37***." 608 patent at 14:41-47 (emphasis added). Reed presents nothing compelling its narrower construction over that explanation in the patent.

C. Terms 4 and 5 – Phrases in Claims 6 and 15

Term	**MPS's Proposed Construction**	**Defendants' Proposed Construction**	**Why Resolution of the Dispute Matters**
Claim 6: "wherein the bootstrap refresh signal has the first logic state when the first comparing signal has a first logic state so as to turn the low side switch on, and the bootstrap refresh signal has a second logic state when the COT control signal has a second logic state so as to turn the low side switch off."	Not indefinite. MPS objects to the length of the proposed phrase as improper and not reasonably subject to construction. To the extent that the Court would consider construing this lengthy phrase, it should be given its plain and ordinary meaning, where the plain and ordinary meaning is the text of the phrase itself.	Indefinite	<u>Plaintiff's Position:</u> Defendants are asking for this term to be found indefinite to remove these proper claims from the case to avoid liability. <u>Defendants' Position:</u> Resolution of this claim construction

Term	MPS's Proposed Construction	Defendants' Proposed Construction	Why Resolution of the Dispute Matters
Claim 15: "the bootstrap refresh signal has a first logic state and a second logic state, and wherein the bootstrap refresh signal has the first logic state when the first comparing signal has the first logic state, and wherein the bootstrap refresh signal has the second logic state when the Constant On Time control signal has the second logic state; and switching the low side switch on and off based on the bootstrap refresh signal so as to decrease the output voltage; and wherein the low side switch is switched on in response to the first logic state of the bootstrap refresh signal; and wherein the low side switch is switched off in response to the second logic state of the bootstrap refresh signal"	Not indefinite. MPS objects to the length of the proposed phrase as improper and not reasonably subject to construction. To the extent that the Court would consider construing this lengthy phrase, it should be given its plain and ordinary meaning, where the plain and ordinary meaning is the text of the phrase itself.	Indefinite	dispute would determine whether claims 6 and 15 are indefinite and therefore invalid and unenforceable.

The court's construction: Reed has not demonstrated that the claim terms are indefinite, and there is no apparent need for any particular construction. Reed argues that the claims include an impossibility, and are therefore indefinite. *See* DI 161 at 60-66. This is an interesting notion and something of a gnarled branch of indefiniteness law.

Reed relies on *Synchronoss Technologies., Inc. v. Dropbox, Inc.*, 987 F.3d 1358 (Fed. Cir. 2021). That decision, and others in this line, trace back to *Allen Engineering Corp. v. Bartell Industries, Inc.*, 299 F.3d 1336 (Fed. Cir. 2002). In *Allen*, the relevant claims "limit[ed] one of the two pivot steering boxes to pivoting 'its gear box only in a plane perpendicular to said biaxial plane,'" but the specification stated that the gear box "cannot pivot in a plane

perpendicular to the biaxial plane." *Id.* at 1349. That contradiction led the Federal Circuit to conclude (and it was undisputed as a matter of fact) that "the inventor did not regard a trowel in which the second gear box pivoted only in a plane perpendicular to the biaxial plane to be his invention." *Id.* Because 35 U.S.C. § 112(b) requires that an inventor "particularly point[] out and distinctly claim[] the subject matter which [he] regards as the invention," if your claim covers only what your patent expressly states is ***not*** your invention, then your claim fails to satisfy the requirement of § 112(b).[3]

Synchronoss applied *Allen*[4] to affirm a district court's grant of summary judgment of indefiniteness where the "asserted claims require[d] generating a single digital media file that itself comprises a directory of digital media files," but the patent owner admitted that "a digital media file cannot contain a directory of digital media files," and it "would not make sense if media data was understood to mean directory of media files." 987 F.3d at 1366 (cleaned up). Hence, just as in *Allen*, the claims were limited to requiring something that the inventor did not regard as his invention in violation of § 112(b). *Id.* The *Synchronoss* court described the

[3] Hence, this line of cases has nothing to do with the Supreme Court's 2014 standard for indefiniteness: "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). It isn't clear at all why covering a disclaimed or impossible embodiment would prevent a skilled artisan from appreciating the scope of the invention — it presumably would not. The claim says what it says.

[4] *Synchronoss* also purports to rely on *Trustees of Columbia University v. Symantec Corp.*, which the *Synchronoss* court described as follows: "we held the claims indefinite because they nonsensically 'describe[d] the step of extracting machine code instructions from something that does not have machine code instructions.'" 987 F.3d at 1366 (quoting *Trs. of Columbia Univ.*, 811 F.3d 1359, 1367 (Fed. Cir. 2016)). That characterization of *Trustees of Columbia University* cannot be squared with the ruling itself, which merely adopted the parties' uncontested stipulation of indefiniteness under a challenged — but affirmed — claim construction. In any event, *Trustees of Columbia University* does not add to the discussion here in any meaningful way.

situation as "nonsensical and require[ing] an impossibility," *id.*, at 1366-67, but we do not read that as announcing some sort of sub-requirement for indefiniteness that claims not cover any nonsensical or impossible embodiments. Rather, *Allen* and *Synchronoss* stand for the simple proposition that if claims cover only subject matter that is ***undisputedly not*** what the inventor regarded as the invention, then the claims are invalid under § 112(b).

Reed also directs us to Judge Burke's recent decision in *Saitus Holding, Inc. v. Samsung Electronics. Co.*, No. 18-850, 2024 WL 5090284 (D. Del. Dec. 12, 2024). There, the court faced a claim requiring "transmitting electric or electromagnetic signals over air" — a curious alternative considering it was undisputed that only electromagnetic signals (and not electric signals) may be transmitted over the air. *Id.* at *5. After dispensing with some creative claim construction arguments, the court then grappled with the consequence of a situation where "(1) it is a scientific impossibility to transmit an electric signal over air; but (2) term 1 facially requires that one permutation of the claimed apparatus be able to do this." *Id.* at *7. The court then relied on *Synchronoss* to hold the claim invalid as indefinite because it claimed an impossible alternative. *Id.* at *9-10. As our discussion above reflects, we do not think *Synchronoss* was trying to create an "impossible embodiment" rule for definiteness. Nor would such a test be advisable. Every claim ever drafted — at least every claim with a "comprising" transition — covers impossible embodiments. The claims in *Allen* and *Synchronoss* were invalid because the ***only*** things they covered were things that the inventor specifically regarded as ***not*** his invention. For that reason, we also decline to apply *Saitus* in the way Reed would like us to.

To resolve the question about how to handle a claim expressly reciting one possible and one impossible alternative, *Saitus* looked to *Cochlear Bone Anchored Solutions AB v. Oticon Medical AB*, 958 F.3d 1348 (Fed. Cir. 2020). *Cochlear* "assumed" that a claim is indefinite

where (i) the claim recites in the alternative a means-plus-function limitation and a conventional structural limitation, and (ii) the means-plus-function limitation lacks corresponding structure in the specification. *Id.* at 1360. The Federal Circuit used the word "assumed" there because *Cochlear* was an appeal from an IPR, so definiteness was not actually on the table. The holding, rather, was that the PTAB should engage in and complete its prior art analysis as applied to the conventional structural alternative limitation. To be sure, the *Cochlear* court's assumption may well be correct, but enforcing § 112(f)'s requirement for corresponding structure on all expressly claimed alternatives is rather a different question than ascertaining whether a claim fails § 112(b)'s requirement to "particularly point[] out and distinctly claim[] the subject matter which [he] regards as the invention." Thus, we cannot agree that *Cochlear* in effect extends *Allen* and *Synchronoss* to situations where a claim covers possible and impossible embodiments.

We ask, instead, whether Reed demonstrated by clear and convincing evidence that Monolithic's claims 6 and 15 fail to "particularly point[] out and distinctly claim[] the subject matter which [Monolithic] regards as the invention." § 112(b). It did not. First of all, there is nothing like the clear and undisputed record that prompted the rulings in *Allen* and *Synchronoss*. So we leave it to Reed to develop its argument and return at summary judgment or later. Second, the standard is not "do the claims cover something illogical or impossible?" While it may be that *Allen* and *Synchronoss* could be extended to cover situations where a claim covers some things the inventor regarded as his invention and some things he did not — we are a bit skeptical and would, at a minimum, like to consider that question on a complete record.

MURPHY, J.

Date: January 10, 2025